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Single crystal growth, transport and scanning tunneling microscopy and spectroscopy of $FeSe_{1-x}S_x$

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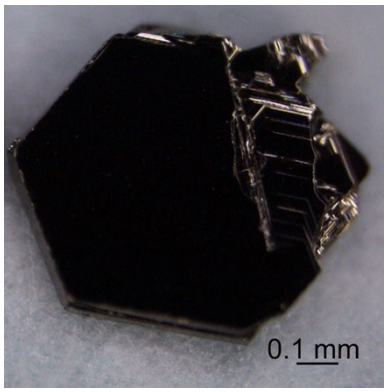

Fig. S1. Photograph of hexagonal FeSe crystal.

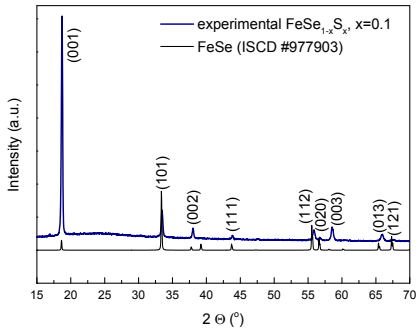

Fig. S2. Powder X-ray diffraction pattern of FeSe0.9S0.1 single crystal.

All diffraction peaks taken by ADP-2 diffractometer (CoKα radiation, λ=1.7903 Å) are indexed on a previously reported tetragonal structure of FeSe (ICSD #977903)[S1]. Slight shift of all the reflections in experimental data towards high 2Θ angles is in accordance with the smaller radius of dopant S as compared to Se. An increase of intensity of (001) and (002) reflections are observed due to plate like morphology of single crystals crushed.

References

S1. C. Koz, M. Schmidt, H. Borrmann, U. Burkhardt, S. Röβler, W. Carrillo-Cabrera, W. Schnelle, U. Schwarz and Y. Grin, (2014), Z. Anorg. Allg. Chem., 2014, **640**, 1600.

Table S1. The crystal lattice parameters of $FeSe_{1-x}S_x$.

S content, %	Cell parameters, Å		Volume, Å^3
	a	*c*	
1,5	3,776(8)	5,500(13)	78.4(2)
3,5	3,774(4)	5,550(9)	79.05(18)
4,7	3,768(12)	5,528(9)	78.5(4)
5,5	3,758(5)	5,53(3)	78.1(4)
7,5	3,770(7)	5,537(13)	78.7(3)
9,5	3,774(9)	5,497(15)	78.3(4)
12	3,761(3)	5,471(13)	77.4(2)
13,5	3,770(7)	5,46(5)	77.6(4)
15,7	3,754(3)	5,451(10)	76.83(2)
19	3,760(4)	5,43(2)	76.7(3)

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